the swinging abutment pocket decreasing leakage into the inlet side of the pump stator chamber.

The swinging abutment **17** affixed in the swinging abutment pocket **19** maintains continuous contact with the outside diameter **49** of the rotor. Various pressures exerted upon the swinging abutment, specifically the abutment flapper **50** provide sealing with the rotor outside diameter effectively creating a partition of inlet and outlet streams to effect intake, compression, and exhaust functions with each 360° of rotor movement. Although other forces assist with the swinging abutment in maintaining sealing contact with the rotor, the primary force applied is the outlet pressure.

Referring now to FIGS. **2**A-**2**D, a description of operation will be given. FIGS. **2**A-**2**D represents progressively different degrees of rotor position over about 360° of travel in a clockwise direction. FIG. **2**A corresponds in rotor position to FIG. **1**.

In FIG. **2**A, the rotor is nearing closing the swinging abutment **17** with outlet pressure exerting force against the flapper **50** of the abutment **17** providing sealing against the rotor **22**. The flapper is designed dynamically to allow the force of the outlet stream to exert pressure against it while not severely restricting outlet flow.

In FIG. **2**B, the rotor **22** has closed the swinging abutment **17** into the swinging abutment pocket **19**. Note the base **53** of the swinging abutment **17** conforms to the radius of the inner wall **14**. Also note that when the swinging abutment **17** is in this position, it does not entirely seal the outlet port **18** to prevent excessive pressure and wear on the abutment and abutment pocket. At this specific rotor position, as the rotor travels, frictional forces upon the swinging abutment, specifically the swinging abutment held in place in the pivoting joint **51** result a kicking out action of the swinging abutment urging and assisting continuing rotor contact. This action is also assisted by the pulsation typical of rotary pumps and outlet back pressure exerted upon the swinging abutment, all together that have the effect of maintaining sealing contact with the rotor body.

In FIG. **2**C, additional forces assist in maintaining the contact of sealing the abutment **17** against the rotor **22**. Inlet forces or suction created by the rotor **22** travel create a pulling or negative pressure upon the swinging abutment flapper **50** assisting the sealing against the rotor body.

In FIG. **2**D, both positive and negative pressures from fluid intake and outlet through inlet and exhaust ports, **16** and **18** are exerted upon the swinging abutment showing the forces to maintain a seal upon the rotor. Swinging abutment rotor contact is assisted by outlet back pressure pulsation and suction forces from inlet pressure. During all positions of the rotor **22** and swinging abutment **17**, its pivoting joint **52** is pressed against the pivoting joint portion **51** of the swinging abutment pocket **19** providing a partition of the inlet and outlet streams when the swinging abutment is sealed against the rotor.

FIG. **3** is a perspective view of the swinging abutment **17**, rotor **22**, and drive post **28** with the rotor body being comprised from a single piece of material or drive post **28** being press fit, molded, cast, or welded into body of rotor **22**. Referring now to the swinging abutment **17**, shown are its flapper **50**, pivoting joint **52**, and the base **53** that makes contact with the rotor **22**. The base **53** is shaped to conform to the inner wall of the chamber. Also shown is an alternative rotor body **122** with a tongue structure **31** and the drive post **128** with a slot feature **32**. Another alternative rotor body is shown with rotor **222** with a slot feature **41** with a drive post **228** having a tongue structure **42**. Both rotor and drive alternatives provide the rotor body with sliding engagement to use centrifugal force to maintain contact with the inner wall and/or compensate for rotor segment contact wear upon the inner wall of the pump stator.

FIG. **4** illustrates a stator **12** with dual abutments **17** and additional abutment pockets, inlet and exhaust ports, **16** and **18**, to create dual pumping chambers within a single stator. Adding additional abutments and accompanying ports create multiple chambers within a single stator for applications requiring multiple feed and discharges from a single pump head. In the dual abutment pump configuration, two discharges occur with every 360° of rotor movement. The multiple abutment pump configuration allows for varied applications such as mixing and multi-stage pumping.

It will finally be understood that the disclosed embodiments represent presently preferred forms of the invention, but are intended to be explanatory rather than limiting of the invention. Reasonable variation and modification of the invention as disclosed in the foregoing disclosure and drawings are possible without departing from the scope of invention. The scope of the invention is defined by the following claims.

What is claimed:

1. A rotary pump comprising:

a stator housing having inner wall with an intake port and exhaust port being formed in the inner wall at spaced-apart locations,

a rotor eccentrically mounted on axial drive post within the stator housing in contact with the inner wall,

a swinging abutment pocket formed in the inner wall located between the exhaust and inlet port locations as the rotor rotating clockwise, and

a swinging abutment is affixed in the swinging abutment pocket and wherein the swinging abutment does not completely seal the outlet port.

2. A rotary pump comprising:

a stator housing having an inner wall with at least two of intake ports and at least two of exhaust ports being formed in the inner wall at spaced-apart locations,

a rotor eccentrically mounted on axial drive post within the stator housing in contact with the inner wall,

at least two of swinging abutment pockets formed in the inner wall located between the exhaust and inlet port locations as rotor rotating clockwise, and

at least two of swinging abutments, wherein each of the at least two of swinging abutments is affixed on each of the at least two of swinging abutment pockets, respectively, wherein the each of at least two of swinging abutments does not completely seal each of the at least two of outlet ports.

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